

Updates and improvements in the latest PVsyst versions PVPMC Workshop 9,10 May 2023

Salt Lake City, USA

B. Wittmer on behalf of the PVsyst development team PVsyst SA, Switzerland

PVSYST SA - Route de la Maison-Carrée 30 - 1242 Satigny - Suisse www.pvsyst.com

Overview

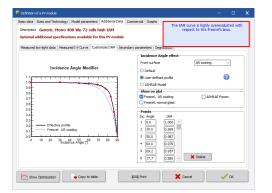
- Last PVPMC in August 2022 -> PVsyst 7.2.18
- Today -> **QPV**SYST v 7.3.4
- Major version 7.3 introduced:
- . Upgrade to Meteonorm 8.1 libraries
- . Single line diagram

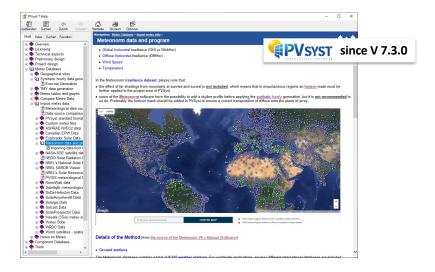
- Database updates
- Shadings in large systems
- Electrical shading calculations
- Single line diagram
- Grid limitation (curtailment)
- Sub-hourly clipping losses
- Other developments
 - More details and customization in results and report
 - More flexibility with orientations
 - Generalized bifacial model
 - Tracker wind stow position
 - Glare analysisc



Databases

- Meteonorm 8.1 libraries
- Easier importing of data from 3E and NEDO Japan
- Meteo APIs (Solcast, SolarAnywhere, Solargis)
- More power optimizer brands:
 - AMPT
 - Huawei
 - Maxim
 - SolarEdge
 - Sungrow (upcoming)
 - Tigo
- Improved guidance with custom PAN files

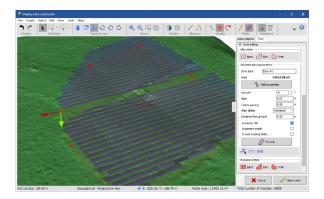


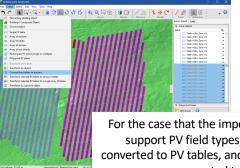




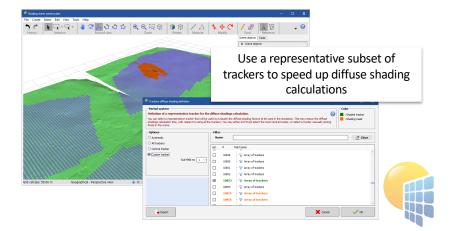
Shadings in large systems

- Improved importing of drawings supported formats : DAE, 3DS, PVC
- Improved tools
 - Table conversion (trackers, table groups)
 - More flexibility with diffuse shading calculation (trackers)
 - More possibilities with ground objects (topography)
 - More options with editing of multiple selections (list of tables with parameters)
 - Performance improvements for large drawings
 - API for Importing of ground image and topography from coordinates
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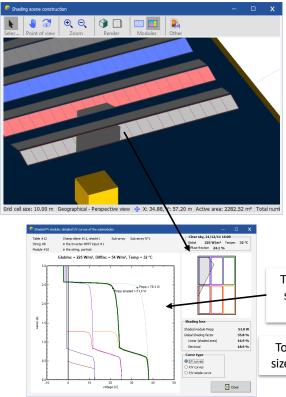




For the case that the imported format does not support PV field types, rectangles can be converted to PV tables, and fixed tilt tables can be converted to trackers



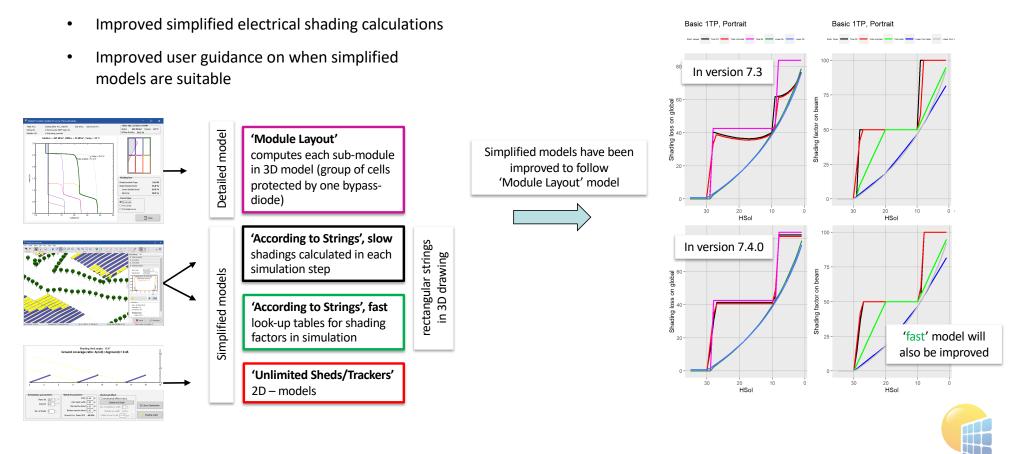
Electrical shadings, PV cell size



- To allow the detailed computing of the IV-curves in partially shaded PV modules, the PV cell size must be known
- For PV modules with non-square cells width and height can now be different
- The grouping of cells with by-pass diodes has diversified

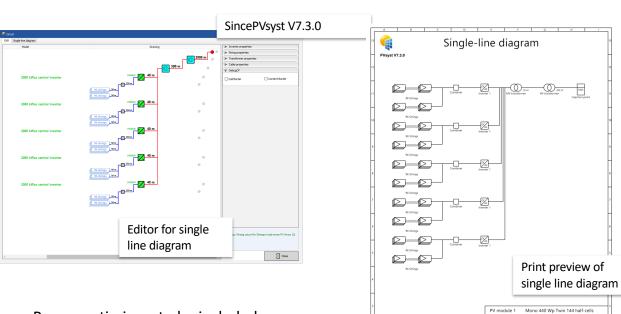
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To compute the IV-curve of the sub-module, the size of one cell and its orientation must be known	Confections: MC-4 Concentrating module Concentrating module Bifacial module
Page 5	Show Optimization Copy to table

Electrical shadings, simplified models



Single Line Diagram

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Power optimizers to be included

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On long term allow editing of system from within SLD



Inverter 1

String 1

PVPMC_2022_Examples

VC7 : Tracker system 10Mwc Central inv

MyLog

2000 kWac central inverter

27 x Mono 440 Wp Twin 144 half-cell

PVsyst DEV

15/08/22

Grid injection limitation

- If curtailment is imposed on PV systems with inverters that have different DC/AC ratios, it is non-trivial to propagate the curtailment to the MPPT inputs
- The modeling of curtailment has been reviewed and improved for several special cases

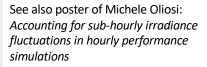
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Energy injected into grid vs Array virtual energy at MPP

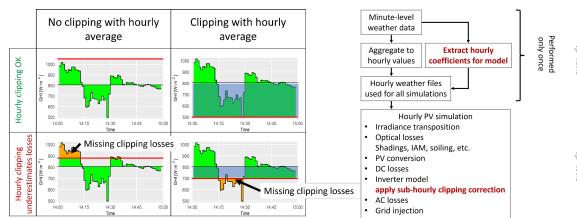
Sub-hourly clipping losses

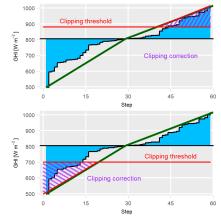
- Sub-hourly clipping losses can be significant with high DC/AC ratios
- We have developed a model that can effectively account for these losses in hourly simulations
- The model requires a one-time pre-analysis of minute-level weather data
- The model will be implemented in PVsyst V8

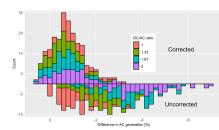


Model published in:

A. Villoz et al., 2022. A Model Correcting the Effect of Sub-Hourly Irradiance Fluctuations on Overload Clipping Losses in Hourly Simulations.
8th World Conference on Photovoltaic Energy Conversion







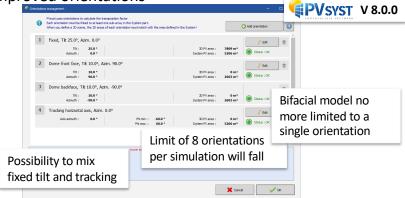


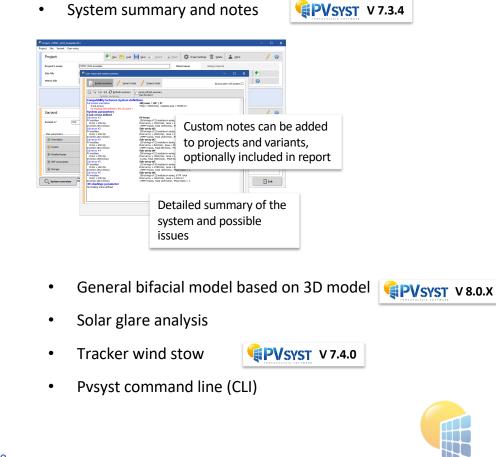
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Other Developments

- Many Minor Improvements in Results and Report
 - More detailed information
 - More options for customization
 - US date format is now well supported in PVsyst
- Economic evaluation
 - improved management of pricing (feed-in and self-consumption)
 - added the internal rate of return (IRR) value and the possibility to define detailed depreciation parameters

Improved orientations





Summary

- Database updates
 - Built-in Meteonorm 8.1 libraries
 - Improved importing of weather data
 - More power optimizer brands
- Shadings in large systems
 - More options for importing 3D models
 - Improved editing tools
 - Improved performance for large 3D models
- Electrical shading calculations
 - More detail for modern PV module cell layouts
 - Improved simplified models used for large PV systems
- Single line diagram
- Grid limitation (curtailment)

- Single line diagram
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 - More details and customization in results and report
 - More flexibility with orientations
 - Generalized bifacial model
 - Tracker wind stow position
 - Glare analysis
 - Pvsyst command line

• Pvsyst training, video tutorials, social networks, Chinese platforms

